

# **KYTC 2015 Traffic Noise Analysis and Abatement Policy Update Summary**

KYTC has updated the Noise Analysis and Abatement Policy. The changes are targeted at fulfilling statutory requirements to revisit the allowable cost for noise abatement as well as simplifying the analysis process.

**The following changes have been made:**

**1. Revised acoustic feasibility requirement**

2011 version: Must provide, at minimum, 5 dBA reduction for more than 50% of impacted receptors.

2015 version: Must provide, at minimum, 5 dBA reduction for, at minimum, three (3) impacted receptors.

**2. Revised noise reduction design goal**

2011 version: 7 dBA reduction for a minimum of 40% of all benefitted receptors.

2015 version: 7dBA reduction for a minimum of 50% of front row benefitted receptors.

**3. Definition added for “front row”**

Front row. A descriptor which applies to receptors and property owners whose associated property borders the right of way of the proposed project.

**4. Language added concerning estimating cost of berms**

In cases where a berm is being considered for noise abatement, the “Cost of the Noise Barrier” shall be determined by an engineer on the project team. The “Cost of the Noise Barrier” in the case of berms should be the best possible estimate of cost, taking into account site/project specific factors such as the amount of necessary earthwork, availability of material, and right of way considerations.

**Q&A:**

**1. Does this change which projects require a noise study?**

No. The definition of a type one project has not changed. Projects with FHWA involvement which meet the definition of a type one project must have a Traffic Noise Impact Analysis prepared.

**2. Have there been any changes to the cost effectiveness calculations for noise walls?**

No changes have been made to the cost effectiveness calculations for noise walls. KYTC performed an analysis of construction cost of recent barriers and did not find any pattern that would indicate that the cost of noise abatement has increased or decreased since 2011. The assumed cost for noise barriers remains \$30 per square foot, and the allowable maximum cost per benefitted receptor remains \$35,000.

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### 3. Why change the acoustical feasibility requirement?

Under the 2011 policy it was possible for a barrier which only benefitted one or two impacted receptors to be found acoustically feasible. (One out of one equals 100%.) This meant that in order to determine acoustical feasibility, a barrier had to be modeled in TNM.

Using the new policy, in cases where there are only one or two impacted receptors in an area where a wall could conceivably be analyzed, it would be impossible to benefit three impacted receptors. This means that before analyzing a barrier in TNM, barriers can be ruled out as not feasible in cases where there are only one or two impacted receptors. This is expected to save effort by ruling out detailed analysis in cases where a barrier would not be found cost effective anyway.

### 4. Why change the Noise Reduction Design Goal?

The reason for this change is detailed in the technical report prepared for Federal Highway Administration titled “Noise Barrier Acceptance Criteria: Analysis”. The report can be found here: [http://www.fhwa.dot.gov/environment/noise/noise\\_barriers/acceptance\\_criteria/index.cfm](http://www.fhwa.dot.gov/environment/noise/noise_barriers/acceptance_criteria/index.cfm)

The 2011 noise reduction design goal was 7 dBA for a minimum of 40% of all benefitted receptors. Recalling that a benefitted receptor is a receptor with 5dBA reduction or greater, the calculation to determine whether the design goal was met was:

$$\text{Design Goal Achieved if } \frac{\# \text{ of receptors with at least 7dBA benefit}}{\# \text{ of receptors with at least 5 dBA benefit}} \geq 0.4$$

When evaluating various wall configurations, as the wall is adjusted upward in an effort to increase the number of receptors receiving a 7 dBA benefit, this may also increase the number of receptors achieving a minimum 5dBA reduction, especially those found in the second or third row back from the roadway where it can be extremely difficult or impossible to provide 7dBA reduction. This complicates efforts to achieve the design goal and can lead to counter-intuitive decisions. For example, there can be a case where a wall meets feasibility and cost effectiveness criteria, but cannot meet the design goal because of an excessive number of receptors which are able to achieve a 5 dBA benefit compared to those which are able to achieve 7 dbA reduction.

Not being able to meet the design goal when there are “too many benefitted receptors” is not a desired outcome. The way to avoid this is to consider only the “front row benefitted receptors” instead of “all receptors” when designing to meet the design goal. This way, there is no “penalty” for additional benefitted receptors gained outside the front row in pursuit of meeting the design goal.

### 5. To which projects will this policy be applied?

All projects with their first design funding authorized after July 1, 2015 shall use this policy. Projects which began under a previous policy may continue under that policy unless the project team decides to apply this policy instead. When scoping a Traffic Noise Impact Analysis Study, it should be clearly communicated what noise policy is to be applied to the project.

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### **6. When should berms be considered as noise abatement?**

Berms may be appropriate for new routes or other projects where there is sufficient space between the highway and the receptors to accommodate the slopes. Building a berm instead of a wall for noise abatement may be an especially attractive option if a project is going to need somewhere to put a lot of excess material. In some such cases, berms may be cost effective even if walls are not.